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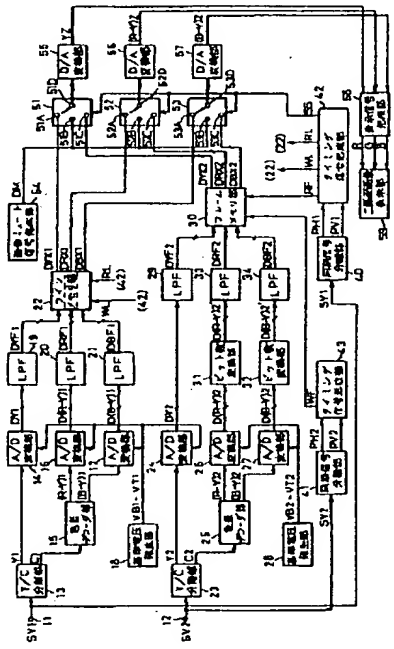
(54) **VIDEO SIGNAL PROCESSING CIRCUIT AND IMAGE DISPLAY DEVICE ADOPTING THE CIRCUIT**

(57) Abstract:

PROBLEM TO BE SOLVED: To reduce the circuit scale and to suppress deterioration in the quality of digital output data by separating a luminance signal and a chrominance signal from a color video signal and converting them by different A/D converters.

SOLUTION: A Y/C separate section 13 (23) separates a luminance signal Y1 (Y2) from a color video signal SV1 (SV2), an A/D converter 14 (24) converts the separated signal into a digital signal to provide an 8-bit digital luminance signal DY1 (DY2). An A/D converter 16 (26) converts a color difference signal D(R-Y)1 (2) being an output of a color difference decoder 15 (25) and provides an output of a 8-bit (6-bit) digital color difference signal D(R-Y)1 (2). Furthermore, an A/D converter 17 (27) provides an output of an 8-bit (6-bit) digital color difference signal D(B-Y)1 (2) similarly to the case with the converters 16, 26. Since the number of bits of the signals D(R-Y)2, D(B-Y)2 is smaller than the number of bits of the signals DY1, 2, the circuit scale of the converters is reduced and the entire circuit scale is decreased.



* NOTICES *

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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] This invention relates to the picture image display which displays the picture image which a color video signal expresses to the luminance signal and the chrominance signal by which the video-signal processing circuit which obtains the luminance signal and the chrominance signal which separate a luminance signal and a chrominance signal from a color video signal, and were digitized by each of the separated luminance signal and a chrominance signal by giving an analog / digital conversion (A/D conversion), and its video-signal processing circuit were applied and digitized based on the video signal for a display which predetermined processing is made and is obtained.
[0002]
[Description of the Prior Art] The 2 screen picture image display system which displays the picture image which independent each of two video signals expresses on the picture image screen using one picture image display is proposed as part [image information offer] of diversification. If it is in such a 2 screen picture image display system For example, the thing with the picture image screen to which a horizontal scanning (line scanning) and a vertical scanning (field scanning) are performed as picture image display is used. The screen of the picture image which each of two video signals expresses to the picture image screen to a line scanning direction, i.e., a longitudinal direction, as that by which mutual contiguity arrangement is carried out Or the screen of the picture image which one video signal expresses covers the whole, and it spreads, and the screen of the picture image which the video signal of another side expresses to the part is incorporated, and it is made and formed.
[0003] When a display of the 2 screen picture image from which mutual contiguity arrangement of the two screens is carried out, and they change to a longitudinal direction in the picture image screen of picture image display by such basis is performed, For example, while the dimension of each line scanning direction of two screens is substantially equivalent, therefore the picture image of the two video signals which comes out of on the other hand, and one certain video signal expresses is displayed in the left half of the picture image screen The video signal for a display supplied to picture image display noting that the picture image which the 2nd video signal which is another side of the two video signals expresses in the right half of the picture image screen is displayed The amount of each of that line term The time-base-compaction video signal which carried out time base compaction of the part for the one line term of the time-base-compaction video signal which carried out time base compaction of the part for the one line term (1H) of the 1st video signal to the abbreviation term of 1/2 line (0.5 H), and the 2nd video signal to the abbreviation term of 1/2 line is compounded. To have been formed is needed.
[0004] In order to obtain ** or the video signal for a ** 2 screen picture image display For example, by processing the 1st video signal using the line memory whose writing and read-out for an one line term of a video signal are made possible, so that time base compaction of the part for each of that line term may be carried out to abbreviation the term of 1/2 line The frame memory whose writing and read-out for an one frame term (2V) in which parts (a part for a part for an odd number field term and an even-number field term) for two 1 field term (1V) of a video signal are formed by standing in a row are made possible while the 1st time-base-compaction video signal is

obtained is used. By processing the 2nd video signal for every frame term of that, so that time base compaction of the part for each line term may be carried out to abbreviation the term of 1/2 line, the 2nd time-base-compaction video signal is obtained, and the technique of compounding the 1st time-base-compaction video signal and the 2nd time-base-compaction video signal is taken.

[0005] and -- if it hits obtaining the 1st time-base-compaction video signal -- line memory -- the 1st video signal -- every [an one line term] -- while writing in one by one, the video signal for the written-in one line each term is read from line memory with the read time equivalent to abbreviation the term of 1/2 line, and the start time selects a read time in that case so that it may be in agreement with the one line write time's for term end time of the 1st video signal That is, as drawing 9 (quadrature-axis:time, axis-of-ordinate:line memory address) is shown by the dashed line, while a part for each line term of the 1st video signal is written in line memory one by one, as drawing 9 is shown by the solid line, it carries out and a part for each written-in line term is read. It is started when the writing for the concerned line term is completed, and read-out for each line term shown by the solid line in this drawing 9 is performed with a speed the abbreviation [twice] of a write-in speed, and is ended in abbreviation the term of 1/2 line from the time of the writing for the concerned whole line term being completed substantially. Therefore, read-out for each line term from line memory will set every [time to be equivalent to abbreviation the term of 1/2 line], and the spacing equivalent to abbreviation the term of 1/2 line, and will be performed intermittently. Thereby, the 1st time-base-compaction video signal is obtained from line memory.

[0006] In obtaining the 2nd time-base-compaction video signal, a part for a part for the odd number field term which forms a part for each frame term of the 2nd video signal, and an even-number field term is written in a frame memory one by one. And the video signal for each line term contained in a part for each frame term of the 2nd video signal written in it is read from a frame memory with the read time equivalent to abbreviation the term of 1/2 line. Thereby, the time-base-compaction video signal about a part for each frame term of the 2nd video signal is obtained from a frame memory as 2nd time-base-compaction video signal.

[0007] Thus, by connecting a part for 1/each two line term in the 2nd time-base-compaction video signal with a part for 1/each two line term [in the 1st time-base-compaction video signal in the 2nd time-base-compaction video signal obtained from the 1st time-base-compaction video signal and frame memory obtained from line memory], respectively, a part for each line term is formed, and it is made and compounded. The video signal for a 2 screen picture image display which changes by that cause, a part for each line term being used as the 2nd [based on the 2nd video signal in the second half] time-base-compaction video signal while the first half is made into the 1st [based on the 1st video signal] time-base-compaction video signal is formed.

[0008] Since the 1st video signal and 2nd video signal are mutually independent also in ** or ** and it will be in the mutual synchronization status, in case of formation of the video signal for a 2 screen picture image display, the synchronous status of the 1st time-base-compaction video signal and the 2nd time-base-compaction video signal poses a problem. While writing to the line memory about the 1st video signal is performed there according to the timing signal formed based on the synchronizing signal contained in the 1st video signal Writing to the frame memory about the 2nd video signal is performed according to the timing signal formed based on the synchronizing signal contained in the 2nd video signal, and it is received. It reads about a part for each line term of the 1st video signal from line memory. And read-out about a part for each frame term of the 2nd video signal from a frame memory The 2nd time-base-compaction video signal obtained from the 1st time-base-compaction video signal and frame memory which is made to be performed according to the timing signal formed based on the synchronizing signal contained in the 1st video signal, and is obtained from line memory sets all in the mutual synchronization status. That is, the video signal for a 2 screen picture image display will make the 1st video signal reference, and will be formed.

[0009] Moreover, in the picture image screen of picture image display, the screen of the picture image which one video signal expresses covers the whole, and it spreads. When a display of the 2 screen picture image which the screen of the picture image which the video signal of another side

expresses is built into the part, and grows into it is performed The video signal for a display supplied to picture image display The fraction with which the amount of [which is constituted by the amount of / two or more / line term] each field term is connected as it is by the amount of [of one video signal / two or more] one line term, A part for the one line term of the synthetic video signal of which the part in a part for the one line term of one video signal is replaced by the amount of [of the video signal of another side by which time base compaction was carried out] one line term, and consists by it is formed as a thing containing the fraction which stand in a row.

[0010] In order to obtain ** or the video signal for a ** 2 screen picture image display For example, while the number for a line term is reduced for every field term of that in the 2nd video signal using the frame memory whose writing and read-out for an one frame term (a part for 2 field term) of a video signal are made possible By processing so that time base compaction of each for the line term by which the number was reduced may be carried out with predetermined compressibility The time-base-compaction video signal based on the 2nd video signal is obtained, and the technique of compounding the time-base-compaction video signal to the part in a part for each field term of the 2nd video signal is taken.

[0011] In obtaining the time-base-compaction video signal based on the 2nd video signal, a part for a part for the odd number field term which forms a part for each frame term of the 2nd video signal, and an even-number field term is written in a frame memory one by one. And that as which the inside for [two or more] the line term contained in each for a part for the odd number field term of the 2nd video signal and an even-number field term written in it was chosen is read from a frame memory one by one with the read time equivalent to a 1/m line term as a number which consists m of 1 size. The time-base-compaction video signal with which time base compaction of two or more each for a line term which constitutes for each field term [a part of] of the 2nd video signal is carried out to 1/m, and it is formed in it from a frame memory by that cause is obtained.

[0012] and the time-base-compaction video signal based on the 2nd video signal obtained from a frame memory is compounded by being inserted that it should be replaced with the part to each, although the inside for two or more line term for a part for the odd number field term which forms a part for each frame term of the 1st video signal, and an even-number field term in which are resembled, respectively and it is contained was chosen The amount of each field term by that cause for example, the fraction from the start edge to the middle It is formed when the amount of [of the 1st video signal / two or more] one line term stands in a row. A part [in a part for the one line term of the 1st video signal in the fraction which follows it] Were replaced and formed by the time-base-compaction video signal based on a part for the one line term as which the 2nd video signal was chosen. It is formed when the amount of [of a synthetic video signal / two or more] one line term stands in a row, and the video signal for a 2 screen picture image display with which the fraction to the termination which follows it is formed when the amount of [of the 1st video signal / two or more] one line term stands in a row again, and it changes further is formed.

[0013] since it is alike also in ** or ** and it also sets, and the 1st video signal and 2nd video signal are independent and will be in the mutual synchronization status mutually, in case of formation of the video signal for a 2 screen picture image display, the synchronous status of the 1st time-base-compaction video signal and the 2nd time-base-compaction video signal poses a problem It is carried out according to the timing signal in which the writing to the frame memory about the 2nd video signal is formed there based on the synchronizing signal contained in the 2nd video signal, and it is received. Read-out about a part for each frame term of the 2nd video signal from a frame memory According to the timing signal formed based on the synchronizing signal contained in the 1st video signal, it will be made to be carried out, and the 1st video signal and the time-base-compaction video signal based on the 2nd video signal obtained from a frame memory will set in the mutual synchronization status.

[0014] In case the video signal for a 2 screen picture image display is formed, thus, about the 2nd video signal Writing to the memory section is performed according to the timing signal formed based on the synchronizing signal contained in the 2nd video signal. Since it is carried out

according to the timing signal formed based on the synchronizing signal contained in the 1st video signal read-out for a part for every line term from the memory section will be in the synchronous status with the 2nd video signal, a frame memory is used for the 2nd writing and read-out of a video signal.
[0015]
[Problem(s) to be Solved by the Invention] In carrying out like **** and forming the video signal for a 2 screen picture image display, time-base-compaction processing of the line memory about each of the 1st and 2nd video signals and a frame memory being used or time-base-compaction processing of the frame memory about the 2nd video signal being used is performed. Therefore, or various kinds of processings containing time-base-compaction processing are [the 2nd video signal is the basis by which A/D conversion was given and digitized, and] made to be performed. [the 1st and 2nd video signals] That is, the A/D converter for digitizing the 2nd video signal at least is prepared, the 2nd digitized video signal is obtained from an A/D converter as digital output data, and various kinds of processings in which the digital output data include time-base-compaction processing are presented.
[0016] In digitizing the 2nd video signal at least, when each of the 1st and 2nd video signals is the color video signal which consists of a luminance signal and a chrominance signal in that case, a luminance signal and a chrominance signal are individually separated from the 2nd video signal, and the A/D converter for chrominance signals for digitizing the A/D converter for luminance signals and chrominance signal for digitizing a luminance signal is prepared separately. Moreover, although the chrominance signal separated from a color video signal is constituted by two color-difference signals, in that case, it has separately an A/D converter for color-difference signals for digitizing another side of the A/D converter for color-difference signals for digitizing one side of two color-difference signals based on a chrominance signal as an A/D converter for chrominance signals, and two color-difference signals.
[0017] The circuit scale in which the A/D converter to video signals, such as an A/D converter for luminance signals and an A/D converter for color-difference signals, takes usually comparatively large-scale circuit arrangement shall be size. Then, from the viewpoint of reduction of a circuit scale, to make the configuration of the A/D converter for luminance signals, the A/D converter for color-difference signals, etc. as small-scale as possible is desired. The resolution which hits A/D conversion is lowered, and a miniaturization of the A/D converter for luminance signals, the A/D converter for color-difference signals, etc. can attain the A/D converter for luminance signals, the A/D converter for color-difference signals, etc., when the number of configuration bits of digital output data considers as a ****** thing.
[0018] However, if the resolution to which the A/D converter for luminance signals, the A/D converter for color-difference signals, etc. hit A/D conversion was lowered and the number of configuration bits of digital output data was made into the ****** thing, after performing various kinds of processings to the digital output data which are the digitized luminance signal or the digitized color-difference signal, the luminance signal or color-difference signal which a digital to analog (D/A conversion) is given to the digital output data, and is obtained will be made into the signal with which quality deteriorated remarkably. Moreover, an example is taken by, for example, the resolution of the regeneration picture image acquired based on a luminance signal and a color-difference signal mainly being influenced by the quality of a luminance signal. Although it can consider making only the A/D converter for color-difference signals with that by which the resolution which hits A/D conversion is lowered and the number of configuration bits of digital output data is few-**ed The deterioration of the color-difference signal which D/A conversion is given to the digital output data which are the color-difference signals digitized from the A/D converter for color-difference signals, and is obtained in that case It will appear notably as a degradation of tinction in the regeneration picture image acquired based on the color-difference signal and the luminance signal corresponding to it.
[0019] Each of the 1st and 2nd video signals is a color video signal especially. A luminance signal and a chrominance signal are separated from each, and it is digitized individually. If it is in the luminance signal and chrominance signal which were separated from the 1st video signal when

the 2 screen picture image display by picture image display is presented Resolution is raised for the A/D conversion to each of both, it is carried out by using the A/D converter made into what has comparatively many numbers of configuration bits of digital output data, and it is received. About the luminance signal and chrominance signal which were separated from the 2nd video signal Resolution is raised for the A/D conversion to a luminance signal, and it is carried out by using the A/D converter made into what has comparatively many numbers of configuration bits of digital output data. When resolution is lowered, the A/D converter by which the number of configuration bits of digital output data is comparatively made a ****** thing is used and A/D conversion to a chrominance signal is performed Originate in the deterioration of the digital output data which are the color-difference signals digitized from the A/D converter which digitizes the chrominance signal separated from the 2nd video signal. A mutual difference of the tinction status [**** / un-] of the 2 screen picture image acquired by the picture image screen of picture image display will be remarkably conspicuous.

[0020] In view of ** or ****, this invention separates a luminance signal and a chrominance signal from a color video signal. Each of the separated luminance signal and a chrominance signal is digitized using the A/D converter in which it was individually prepared to each. In obtaining the chrominance signal digitized with the digitized luminance signal Reduction of the circuit scale of the fraction containing the A/D converter individually prepared in each of a luminance signal and a chrominance signal can be aimed at. And the video-signal processing circuit which can suppress the deterioration of the digital output data which are the luminance signal digitized from each A/D converter or the digitized color-difference signal is offered.

[0021] Moreover, a video-signal processing circuit is applied like [above-mentioned], and this invention performs predetermined processing to each of the digital output data which are the digital output data which are the digitized luminance signals which are obtained from the video-signal processing circuit, and the digitized chrominance signal, and also offers the picture image display which displays the picture image which a color video signal expresses based on the video signal for a display formed by that cause.

[0022]

[Means for Solving the Problem] The separation section which the video-signal processing circuit concerning this invention separates a luminance signal and a chrominance signal from a color video signal, and is obtained, The 1st A/D-conversion means which obtains the luminance signal which performs the sampling comparison with the 1st reference voltage and luminance signal which take two or more voltage values which have the 1st number of stages and are gradually different, and was digitized based on the result of the sampling comparison, The 2nd A/D-conversion means which obtains the chrominance signal which performs the sampling comparison with the 2nd reference voltage and chrominance signal which take two or more voltage values which have the 2nd number of stages and are gradually different, and was digitized based on the result of the sampling comparison, A number conversion means of bits to perform processing to which the number of bits of the digitized chrominance signal which is obtained from the 2nd A/D-conversion means is made to increase, While each of the digitized chrominance signal which is obtained from the luminance signal and the number transducer of bits which are obtained from the 1st A/D-conversion means, and which were digitized is written in serially It has the memory section from which each of the digitized luminance signal by which writing was made, and the digitized chrominance signal is read with predetermined timing. While the 2nd number of stages about the voltage value which it takes is few-**ed from the 1st number of stages about the voltage value which the 1st reference voltage in the 1st A/D-conversion means takes, the 2nd reference voltage in the 2nd A/D-conversion means The difference of the maximum voltage value and the minimum voltage value shall be equivalent to 1/k of the difference of the maximum voltage value of the 1st reference voltage, and the minimum voltage value (number with which k consists of 1 size), and is constituted.

[0023] If it is in the video-signal processing circuit concerning this invention constituted like **** It compares with the 1st number of stages about the voltage value which the 1st reference voltage used for the sampling comparison with a luminance signal in the 1st A/D-conversion means

which performs digitization about the luminance signal separated from the color video signal takes. The 2nd number of stages about the voltage value which the 2nd reference voltage used for the sampling comparison with a chrominance signal in the 2nd A/D-conversion means which performs digitization about the chrominance signal separated from the color video signal takes is few-**ed. Therefore, it compares with the number of bits of the digitized luminance signal which is obtained from the 1st A/D-conversion means as digital output data. Since the number of bits of the digitized chrominance signal which is obtained from the 2nd A/D-conversion means as digital output data is few-**ed, let the circuit scale of the 2nd A/D-conversion means be smallness as compared with the circuit scale of the 1st A/D-conversion means according to it. Consequently, reduction of the circuit scale of the fraction containing the 2nd A/D-conversion means which performs digitization about the 1st A/D-conversion means and chrominance signal which performs digitization about a luminance signal will be achieved.

[0024] Moreover, the difference of the maximum voltage value of the 2nd reference voltage used for the sampling comparison with a chrominance signal in the 2nd A/D-conversion means and the minimum voltage value Since it shall be equivalent to 1/k of the difference of the maximum voltage value of the 1st reference voltage used for the sampling comparison with a luminance signal in the 1st A/D-conversion means, and the minimum voltage value The voltage domain from the minimum voltage value of the 2nd reference voltage to the maximum voltage value will be set to 1/k of the voltage domain from the minimum voltage value of the 1st reference voltage to the maximum voltage value. In the 2nd A/D-conversion means, the number of the points comparing [sampling] in the level domain of the chrominance signal corresponding to the voltage domain from the minimum voltage value of the 2nd reference voltage set to 1/k of the voltage domain from the minimum voltage value of the 1st reference voltage to the maximum voltage value to the maximum voltage value therefore, temporarily The voltage domain from the minimum voltage value of the 2nd reference voltage to the maximum voltage value is made [more] than the number of the points comparing [sampling] in the same level domain in the chrominance signal in the basis to which it was presupposed that it is supposed that it is equivalent to the voltage domain from the minimum voltage value of the 1st reference voltage to the maximum voltage value.

[0025] The digitized chrominance signal which the number of bits of the digitized chrominance signal which is obtained from the 2nd A/D-conversion means by the number conversion means of bits is made to increase by that cause, and is formed The 2nd number of stages about the voltage value which the 2nd reference voltage used for the sampling comparison with a chrominance signal in the 2nd A/D-conversion means takes In a degradation of the quality resulting from having few-**ed, it is effectively suppressed from the 1st number of stages about the voltage value which the 1st reference voltage used for the sampling comparison with a luminance signal in the 1st A/D-conversion means takes. And with the digitized luminance signal, the digitized chrominance signal which is obtained by ** or the number conversion means of ** bits is written in the memory section, and is read from the memory section with predetermined timing after that.

[0026] Moreover, if it is in the 1st mode of the picture image display concerning this invention, the 1st video signal and 1st chrominance signal are separated from the 1st color video signal, the video-signal processing circuit which requires the 2nd color video signal for this above-mentioned invention with it is supplied, and the 2nd 2nd digitized luminance signal based on a color video signal and 2nd digitized chrominance signal are formed. And the 1st digitized luminance signal which A/D conversion is given to the 1st luminance signal and obtained, and the 2nd digitized luminance signal are compounded. While D/A conversion is given to the digital synthesis signal acquired by that cause and the luminance signal for a display is formed The 1st digitized chrominance signal which A/D conversion is given to the 1st chrominance signal and obtained, and the 2nd digitized chrominance signal are compounded. D/A conversion is given to the digital synthesis signal acquired by that cause, and the chrominance signal for a display is formed. by the 2 screen picture image display Based on the luminance signal for a display, and the chrominance signal for a display, the 2 screen picture image display which displays simultaneously the picture image which the picture image which the 1st color video signal expresses, and the 2nd color video

signal express is performed.
[0027] Furthermore, if it is in the 2nd mode of the picture image display concerning this invention, the 1st video signal and 1st chrominance signal are separated from the 1st color video signal, the video-signal processing circuit which requires the 2nd color video signal for this above-mentioned invention with it is supplied, and the 2nd 2nd digitized luminance signal based on a color video signal and 2nd digitized chrominance signal are formed. And while the 2nd luminance signal which D/A conversion is given to the 1st luminance signal and the 2nd digitized luminance signal, and is obtained is compounded and the luminance signal for a display is formed The 2nd chrominance signal which D/A conversion is given to the 1st chrominance signal and the 2nd digitized chrominance signal, and is obtained is compounded, and the luminance signal for a display is formed. by the 2 screen picture image display Based on the luminance signal for a display, and the chrominance signal for a display, the 2 screen picture image display which displays simultaneously the picture image which the picture image which the 1st color video signal expresses, and the 2nd color video signal express is performed.
[0028] Even if it is in each of the 1st mode of the picture image display concerning such this invention, and the 2nd mode, the outstanding operation effect accompanied by processing of the 2nd color video signal brought by the video-signal processing circuit concerning this invention mentioned above will be acquired.
[0029]
[Embodiments of the Invention] Drawing 1 shows an example of the picture image display concerning this invention which an example of the video-signal processing circuit concerning this invention applied and consisted of.
[0030] In the example shown in drawing 1 , two color video signals SV1 and SV2 which became independent mutually to the video-signal input terminals 11 and 12 are supplied, respectively. these color video signals SV1 and SV2 -- any -- although -- an one frame term shall be formed by the odd number field term and the even-number field term, and an animation or a still picture shall be expressed
[0031] The color video signal SV1 supplied to the video-signal input terminal 11 is supplied to a luminance signal / chrominance-signal (Y/C) separation section 13, and a luminance signal Y1 and the carrier chrominance signal C1 are separated in Y / C separation section 13. The carrier chrominance signal C1 which the luminance signal Y1 obtained from Y / C separation section 13 is supplied to the A/D-conversion section 14, and is obtained from Y / C separation section 13 is supplied to the color difference decoder section 15.
[0032] In the color difference decoder section 15, two shaft recovery processing about a carrier chrominance signal C1 is performed, and it is the R-Y color-difference signal (R-Y) 1. B-Y color-difference signal (B-Y) 1 It is obtained. And R-Y color-difference signal (R-Y) 1 from the color difference decoder section 15 The A/D-conversion section 16 is supplied and it is the B-Y color-difference signal (B-Y) 1 from the color difference decoder section 15. The A/D-conversion section 17 is supplied.
[0033] The reference voltage which sets maximum voltage value VT1 from the reference-voltage occurrence section 18 to voltage value VT, and sets minimum voltage value VB1 to voltage value VB is supplied to each of the A/D-conversion sections 14, 16, and 17. And each of the A/D-conversion sections 14, 16, and 17 An input analog signal shall be changed by the digital output data of a bits [several] predetermined configuration, for example, 8 bit patterns, and is set to each of the A/D-conversion sections 14, 16, and 17. While it has maximum voltage value VT1 (voltage value VT) and minimum voltage value VB1 (voltage value VB) based on the reference voltage from the reference-voltage occurrence section 18 The reference voltage which takes the voltage value which is gradually different with 256 steps of number of stageses at equal intervals from minimum voltage value VB1 to maximum voltage value VT1 is formed.
[0034] If it is in the A/D-conversion section 14, digitization by the A/D conversion about a luminance signal Y1 is performed, and the digital luminance signal DY1 is formed with the digital output data of 8 bit patterns. In the A/D-conversion section 14, the sampling comparison with the reference voltage and the luminance signal Y1 which take the voltage value which is

gradually different with 256 steps of number of stageses at equal intervals from minimum voltage value VB1 to maximum voltage value VT1 is performed with a predetermined sampling period in that case. Consequently, 256= 28 The sampling comparison output which has gradual change width of face is obtained, the digital output data of 8 bit patterns based on the sampling comparison output are formed, and it is delivered as a digital luminance signal DY1.
[0035] moreover -- if it is in the A/D-conversion section 16 -- R-Y color-difference signal (R-Y) 1 about -- digitization by A/D conversion carries out -- having -- digital R-Y color-difference signal D(R-Y) 1 It is formed with the digital output data of 8 bit patterns. The reference voltage and the R-Y color-difference signal (R-Y) 1 which take the voltage value which is gradually different with 256 steps of number of stageses at equal intervals from minimum voltage value VB1 to maximum voltage value VT1 in the A/D-conversion section 16 in that case A sampling comparison is performed with a predetermined sampling period. 256= 28 [consequently,] the sampling comparison output which has gradual change width of face is obtained, and the digital output data of 8 bit patterns based on the sampling comparison output form -- having -- it -- digital R-Y color-difference signal D(R-Y) 1 ****** -- it delivers
[0036] if it is in the A/D-conversion section 17 similarly -- B-Y color-difference signal (B-Y) 1 about -- digitization by A/D conversion carries out -- having -- digital B-Y color-difference signal D(B-Y) 1 It is formed with the digital output data of 8 bit patterns. The reference voltage and the B-Y color-difference signal (B-Y) 1 which take the voltage value which is gradually different with 256 steps of number of stageses at equal intervals from minimum voltage value VB1 to maximum voltage value VT1 in the A/D-conversion section 17 in that case A sampling comparison is performed with a predetermined sampling period. 256= 28 [consequently,] the sampling comparison output which has gradual change width of face is obtained, and the digital output data of 8 bit patterns based on the sampling comparison output form -- having -- it -- digital B-Y color-difference signal D(B-Y) 1 ****** -- it delivers
[0037] the digital luminance signal DY1 from the A/D-conversion section 14, and digital R-Y color-difference signal D(R-Y) 1 from the A/D-conversion section 16 And digital B-Y color-difference signal D(B-Y) 1 from the A/D-conversion section 17 Processing by which the number of sampling points is reduced by half in digital low-pass transit VCFs (LPF) 19, 20, and 21 should do, respectively. The digital luminance signal DYF1 and digital R-Y color-difference signal DRF1 And digital B-Y color-difference signal DBF1 It is carried out and the line memory section 22 is supplied.
[0038] The color video signal SV2 supplied to the video-signal input terminal 12 is supplied to Y / C separation section 23, and a luminance signal Y2 and the carrier chrominance signal C2 are separated in Y / C separation section 23. The carrier chrominance signal C2 which the luminance signal Y2 obtained from Y / C separation section 23 is supplied to the A/D-conversion section 24, and is obtained from Y / C separation section 23 is supplied to the color difference decoder section 25.
[0039] In the color difference decoder section 25, two shaft recovery processing about a carrier chrominance signal C2 is performed, and it is the R-Y color-difference signal (R-Y) 2. B-Y color-difference signal (B-Y) 2 It is obtained. And R-Y color-difference signal (R-Y) 2 from the color difference decoder section 25 The A/D-conversion section 26 is supplied and it is the B-Y color-difference signal (B-Y) 2 from the color difference decoder section 25. The A/D-conversion section 27 is supplied.
[0040] The reference voltage which sets maximum voltage value VT1 from the reference-voltage occurrence section 18 to voltage value VT, and sets minimum voltage value VB1 to voltage value VB is supplied to the A/D-conversion section 24. As opposed to it to each of the A/D-conversion sections 26 and 27 The reference voltage made into voltage value [(VT+VB)/2]-[(VT-VB) / 2k] is supplied in minimum voltage value VB2 considering maximum voltage value VT2 from the reference-voltage occurrence section 28 as voltage value [(VT+VB) /2]+ [(VT-VB)/2k] (number with which k consists of 1 size). The reference voltage from this reference-voltage occurrence section 28 the middle voltage value of the maximum voltage value VT2 and minimum voltage value VB2 It is made equal to the middle voltage value of maximum voltage value VT1 about the

reference voltage from the reference-voltage occurrence section 18, and minimum voltage value VB1. The difference of the maximum voltage value VT2 and minimum voltage value VB2, i.e., the voltage range of prices from minimum voltage value VB2 to maximum voltage value VT2 It is selected by what is set to 1/k of the difference of maximum voltage value VT1 about the reference voltage from the reference-voltage occurrence section 18, and minimum voltage value VB1, i.e., the voltage range of prices from minimum voltage value VB1 to maximum voltage value VT1.

[0041] the A/D-conversion section 24 shall change an input analog signal into the digital output data of for example, 8 bit patterns like each of the A/D-conversion sections 14, 16, and 17 -- having -- it -- receiving -- each of the A/D-conversion sections 26 and 27 -- an input analog signal -- the number configuration of bits of the digital output data from the A/D-conversion section 24 -- smallness -- for example, it shall be changed into the digital output data of 6 bit patterns And in the A/D-conversion section 24, while it has maximum voltage value VT1 (voltage value VT) and minimum voltage value VB1 (voltage value VB) based on the reference voltage from the reference-voltage occurrence section 18, the reference voltage which takes the voltage value which is gradually different with 256 steps of number of stageses at equal intervals from minimum voltage value VB1 to maximum voltage value VT1 is formed. On the other hand, it sets to each of the A/D-conversion sections 26 and 27. While it has maximum voltage value VT2 (voltage value [(VT+VB) /2]+ [(VT-VB)/2k]) and minimum voltage value VB2 (voltage value [(VT+VB)/2]-[(VT-VB) / 2k]) based on the reference voltage from the reference-voltage occurrence section 28 The reference voltage which takes the voltage value which is gradually different with 64 steps of number of stageses at equal intervals from minimum voltage value VB2 to maximum voltage value VT2 is formed.

[0042] If it is in the A/D-conversion section 24, digitization by the A/D conversion about a luminance signal Y2 is performed, and the digital luminance signal DY2 is formed with the digital output data of 8 bit patterns. In the A/D-conversion section 24, the sampling comparison with the reference voltage and the luminance signal Y2 which take the voltage value which is gradually different with 256 steps of number of stageses at equal intervals from minimum voltage value VB1 to maximum voltage value VT1 is performed with a predetermined sampling period in that case. Consequently, 256= 28 The sampling comparison output which has gradual change width of face is obtained, the digital output data of 8 bit patterns based on the sampling comparison output are formed, and it is delivered as a digital luminance signal DY2.

[0043] Moreover, if it is in the A/D-conversion section 26, digitization by the A/D conversion about the R-Y color-difference signal (R-Y) 2 is performed, and the digital R-Y color-difference signal D(R-Y) 2 is formed with the digital output data of 6 bit patterns. In the A/D-conversion section 26, the sampling comparison with the reference voltage and the R-Y color-difference signal (R-Y) 2 which take the voltage value which is gradually different with 64 steps of number of stageses at equal intervals from minimum voltage value VB2 to maximum voltage value VT2 is performed with a predetermined sampling period in that case. Consequently, 64= 26 The sampling comparison output which has gradual change width of face is obtained, the digital output data of 6 bit patterns based on the sampling comparison output are formed, and it is delivered as a digital R-Y color-difference signal D(R-Y) 2.

[0044] Similarly, if it is in the A/D-conversion section 27, digitization by the A/D conversion about the B-Y color-difference signal (B-Y) 2 is performed, and the digital B-Y color-difference signal D(B-Y) 2 is formed with the digital output data of 6 bit patterns. In the A/D-conversion section 27, the sampling comparison with the reference voltage and the B-Y color-difference signal (B-Y) 2 which take the voltage value which is gradually different with 64 steps of number of stageses at equal intervals from minimum voltage value VB2 to maximum voltage value VT2 is performed with a predetermined sampling period in that case. Consequently, 64= 26 The sampling comparison output which has gradual change width of face is obtained, the digital output data of 6 bit patterns based on the sampling comparison output are formed, and it is delivered as a digital B-Y color-difference signal D(B-Y) 2.

[0045] It is supplied to the frame memory section 30, processing by which the number of

sampling points is reduced by half in LPF29 being made, and the digital luminance signal DY2 from the A/D-conversion section 24 being used as the digital luminance signal DYF2. As opposed to it the digital R-Y color-difference signal D(R-Y) 2 from the A/D-conversion section 26 The number conversion to 8 bit patterns of bits from 6 bit patterns by the number transducer 31 of bits is performed. After considering as digital R-Y color-difference-signal D(R-Y) 2' constituted with the digital data of 8 bit patterns, processing by which the number of sampling points is reduced by half in LPF33 is made, it considers as the digital R-Y color-difference signal DRF2, and the frame memory section 30 is supplied. Similarly the digital B-Y color-difference signal D(B-Y) 2 from the A/D-conversion section 27 The number conversion to 8 bit patterns of bits from 6 bit patterns by the number transducer 32 of bits is performed. After considering as digital B-Y color-difference-signal D(B-Y) 2' constituted with the digital data of 8 bit patterns, processing by which the number of sampling points is reduced by half in LPF34 is made, it considers as the digital B-Y color-difference signal DBF2, and the frame memory section 30 is supplied.

[0046] The reference voltage which drawing 2 sets to voltage value VT maximum voltage value VT1 supplied to the A/D-conversion section 24 when k is selected by 2 (k= 2) from the reference-voltage occurrence section 18, and sets minimum voltage value VB1 to voltage value VB, The reference voltage which makes maximum voltage value VT2 supplied to each of the A/D-conversion sections 26 and 27 from the reference-voltage occurrence section 28 voltage value [(VT+VB) /2]+ [(VT-VB)/2k], and makes minimum voltage value VB2 voltage value [(VT+VB)/2]-[(VT-VB) / 2k], The relation with the R-Y color-difference signal (R-Y) 2 and the B-Y color-difference signal (B-Y) 2 which are supplied to the A/D-conversion sections 26 and 27 from the color difference decoder section 25, respectively is shown. In this case, maximum voltage value VT2 is set to a voltage value (3VT+VB) / 4, and minimum voltage value VB2 is set to a voltage value (VT+3VB) / 4.

[0047] Thus, as compared with the voltage range of prices of the reference voltage which sets maximum voltage value VT1 to voltage value VT, and sets minimum voltage value VB1 to voltage value VB, will have one half of voltage range of prices. [when the reference voltage which sets maximum voltage value VT2 to a voltage value (3VT+VB) / 4, and sets minimum voltage value VB2 to a voltage value (VT+3VB) / 4 is supplied to the A/D-conversion sections 26 and 27] Let each level domain of the R-Y color-difference signal (R-Y) 2 supplied from the color difference decoder section 25, and the B-Y color-difference signal (B-Y) 2 be the thing of the grade which contains a little the fraction which usually exceeds the voltage range of prices of the reference voltage supplied to the A/D-conversion sections 26 and 27.

[0048] Drawing 3 shows the detail about each of digital R-Y color-difference-signal [in the fraction containing the A/D-conversion section 26 when k is selected by 2 (k= 2), the number transducer 31 of bits, and LPF33] D(R-Y) 2, and digital R-Y color-difference-signal D(R-Y) 2', and the digital R-Y color-difference signal DRF2. In drawing 3 , while the R-Y color-difference signal (R-Y) 2 from the color difference decoder section 25 is supplied to the A/D-conversion section 26 The reference voltage which sets maximum voltage value VT2 from the reference-voltage occurrence section 28 to a voltage value (3VT+VB) / 4, and sets minimum voltage value VB2 to a voltage value (VT+3VB) / 4 is supplied, and it sets among the A/D-conversion section 26. While it has maximum voltage value VT2 (a voltage value (3VT+VB) / 4) and minimum voltage value VB2 (a voltage value (VT+3VB) / 4), the reference voltage which takes the voltage value which is gradually different with 64 steps of number of stageses at equal intervals from minimum voltage value VB2 to maximum voltage value VT2 is formed.

[0049] And it consists of data-bit D (R-Y) 2-0 from the A/D-conversion section 26, D (R-Y) 2-1, D (R-Y) 2-2, D (R-Y) 2-3, D (R-Y) 2-4, and D (R-Y) 2-5. The digital R-Y color-difference signal D(R-Y) 2 of which data-bit D (R-Y) 2-0 consists by the least significant bit (LSB) with the digital output data of 6 bit patterns whose data-bit D (R-Y) 2-5 is the most significant bit (MSB) is obtained. It is supplied to the number transducer 31 of bits.

[0050] In the number transducer 31 of bits, while data-bit D(R-Y) 2' of LSB in the digital R-Y color-difference signal D(R-Y) 2 which expresses "0" to low order further, and 0 are added digital -- R -- - -- Y -- a color-difference signal -- D (R-Y) -- two -- it can set -- a data bit -- D (R-Y) --

two -- - -- zero -- - -- D (R-Y) -- two -- - -- five -- respectively -- a data bit -- D (R-Y) -- two -- ' -- - -- one -- D (R-Y) -- two -- ' -- - -- two -- D (R-Y) -- two -- ' And it is referred to as D(R-Y) 2' and 7, and the inversion output by inverter 31I about data-bit D (R-Y) 2-5 is further allotted as data-bit D(R-Y) 2' and 6 between data-bit D(R-Y) 2', 5 and data-bit D(R-Y) 2', and 7. The digital data of 8 bit patterns which set data-bit D(R-Y) 2' and 0 to LSB, and set data-bit D(R-Y) 2' and 7 to MSB by that cause is formed, and as digital R-Y color-difference-signal D(R-Y) 2', it is delivered from the number transducer 31 of bits, and is supplied to LPF33.

[0051] In LPF33 the data bit D(R-Y) 2 in digital R-Y color-difference-signal D(R-Y)2' -- '-0 - D (R-Y)2' and 7 -- respectively -- a data bit DRF 2-0, DRF 2-1, DRF 2-2, DRF 2-3, DRF 2-4, and DRF 2-5 -- DRF2 and 6 And it is changed into DRF 2-7, and the digital data of 8 bit patterns which set a data bit DRF 2-0 to LSB, and set a data bit DRF 2-7 to MSB is delivered from LPF33 as a digital R-Y color-difference signal DRF2.

[0052] Drawing 4 shows the detail about each of digital B-Y color-difference-signal [in the fraction containing the A/D-conversion section 27 when k is selected by 2 (k= 2), the number transducer 32 of bits, and LPF34] D(B-Y) 2, and digital B-Y color-difference-signal D(B-Y) 2', and the digital B-Y color-difference signal DBF2. these -- digital -- B -- - -- Y -- a color-difference signal -- D (B-Y) -- two -- digital -- B -- - -- Y -- a color-difference signal -- D (B-Y) -- two -- ' -- and -- digital -- B -- - -- Y -- a color-difference signal -- DBF -- two -- ******** -- drawing -- three -- being shown -- having -- digital -- R -- - -- Y -- a color-difference signal -- D (R-Y) -- two -- digital -- R -- - -- Y --

[0053] Namely, while the B-Y color-difference signal (B-Y) 2 from the color difference decoder section 25 is supplied to the A/D-conversion section 27 The reference voltage which sets maximum voltage value VT2 from the reference-voltage occurrence section 28 to a voltage value (3VT+VB) / 4, and sets minimum voltage value VB2 to a voltage value (VT+3VB) / 4 is supplied, and it sets among the A/D-conversion section 27. While it has maximum voltage value VT2 (a voltage value (3VT+VB) / 4) and minimum voltage value VB2 (a voltage value (VT+3VB) / 4), the reference voltage which takes the voltage value which is gradually different with 64 steps of number of stageses at equal intervals from minimum voltage value VB2 to maximum voltage value VT2 is formed. Set data-bit D (B-Y) 2-5 to MSB from the A/D-conversion section 27 by that cause, using data-bit D (B-Y) 2-0 as LSB. The digital B-Y color-difference signal D(B-Y) 2 which changes with the digital output data of 6 bit patterns is obtained. 'The digital B-Y color-difference signal D(B-Y) 2 which changes with the digital data of 8 bit patterns which set -0 to LSB and set data-bit D(B-Y) 2' and 7 to MSB' is obtained. the data bit D (B-Y) 2 from the number transducer 32 equipped with inverter 32I of bits -- The digital B-Y color-difference signal DBF2 which consists of LPF34 with the digital data of 8 bit patterns which set a data bit DBF 2-0 to LSB, and set a data bit DBF 2-7 to MSB is obtained.

[0054] Formation of the digital R-Y color-difference signal D(R-Y) 2 which changes with the digital output data of 6 bit patterns based on the R-Y color-difference signal (R-Y) 2 in the A/D-conversion section 26, And specifically, conversion to digital R-Y color-difference-signal D(R-Y) 2' which consists of the digital R-Y color-difference signal D(R-Y) 2 in the number transducer 31 of bits with the digital data of 8 bit patterns is performed, as shown in drawing 5 .

[0055] If it is in the example shown in drawing 5 , as shown in A of drawing 5 , the R-Y color-difference signal (R-Y) 2 It is assumed in the fraction containing the level corresponding to the interval voltage VM in the reference voltage which has maximum voltage value VT2 (a voltage value (3VT+VB) / 4) and minimum voltage value VB2 (a voltage value (VT+3VB) / 4) that it has the level which increases linearly. A ** or ** case, as shown in B of drawing 5 , the digital R-Y color-difference signal D(R-Y) 2 made into the digital output data of 6 bit patterns which increase from the A/D-conversion section 26 gradually to 0-63 including the central data value 32 in the 6 bit data value which changes gradually is obtained.

[0056] And as shown in C of drawing 5 , it is changed into digital R-Y color-difference-signal D (R-Y)2' made into the digital data of 8 bit patterns which the digital R-Y color-difference signal D (R-Y) 2 shown in B of drawing 5 increases gradually to 0-255 including the central data value 128 in the 8 bit data value which changes gradually in the number transducer 31 of bits. As for digital

R-Y color-difference-signal D(R-Y)2' made into the digital data of these 8 bit patterns, a 8 bit data value shall change every [2].
[0057] Formation of the digital R-Y color-difference signal D(R-Y) 2 which incidentally changes with the digital output data of 6 bit patterns based on the R-Y color-difference signal (R-Y) 2 in the A/D-conversion section 26, And the conversion to digital R-Y color-difference-signal D(R-Y) 2' which consists of the digital R-Y color-difference signal D(R-Y) 2 in the number transducer 31 of bits with the digital data of 8 bit patterns When there is nothing then and the case where it is carried out according to the conventional technique is assumed according to this invention, to a ** or ** case As shown in drawing 10 , the reference voltage which sets maximum voltage value VT1 to voltage value VT at the A/D-conversion section 26, and sets minimum voltage value VB1 to voltage value VB is supplied, and it sets to the number transducer 31 of bits. Two data bits of data-bit D (R-Y) 2-0 which is the LSB with which each expresses "0" to low order further are added to data-bit D (R-Y) 2-0 which constitutes the digital R-Y color-difference signal D(R-Y) 2, - D (R-Y) 2-5.
[0058] Therefore, while it has maximum voltage value VT1 (voltage value VT) and minimum voltage value VB1 (voltage value VB) in the A/D-conversion section 26 in this case, the reference voltage which takes the voltage value which is gradually different with 64 steps of number of stageses at equal intervals from minimum voltage value VB1 to maximum voltage value VT1 is formed. Moreover, digital R-Y color-difference-signal D(R-Y)2' made into the digital data of 8 bit patterns by which two data bits to which each expresses "0" are further added and formed in low order from LSB of data-bit D (R-Y) 2-0 which constitutes the digital R-Y color-difference signal D(R-Y) 2, - D (R-Y) 2-5 is obtained from the number transducer 31 of bits.
[0059] Formation of the digital R-Y color-difference signal D(R-Y) 2 which changes with the digital output data of 6 bit patterns based on the R-Y color-difference signal (R-Y) 2 in the A/D-conversion section [** / ** or] 26, And specifically, conversion to digital R-Y color-difference-signal D(R-Y)2' which consists of the digital R-Y color-difference signal D(R-Y) 2 in the number transducer 31 of bits with the digital data of 8 bit patterns is performed, as shown in drawing 11 .
[0060] When shown in drawing 11 , even if it is, as shown in A of drawing 11 , the R-Y color-difference signal (R-Y) 2 is assumed to have the level which increases linearly in the fraction containing the level corresponding to the interval voltage VM in the reference voltage which has maximum voltage value VT1 (voltage value VT) and minimum voltage value VB1 (voltage value VB). A ** or ** case, as shown in B of drawing 11 , the digital R-Y color-difference signal D(R-Y) 2 made into the digital output data of 6 bit patterns which increase from the A/D-conversion section 26 gradually to 0-63 including the central data value 32 in the 6 bit data value which changes gradually is obtained. The voltage value corresponding to one phase in a 6 bit data value will be made into twice in the case of the digital R-Y color-difference signal D(R-Y) 2 shown in B of drawing 5 in that case.
[0061] And as shown in C of drawing 11 , it is changed into digital R-Y color-difference-signal D (R-Y)2' made into the digital data of 8 bit patterns which the digital R-Y color-difference signal D (R-Y) 2 shown in B of drawing 11 increases gradually to 0-255 including the central data value 128 in the 8 bit data value which changes gradually in the number transducer 31 of bits. As for digital R-Y color-difference-signal D(R-Y)2' made into the digital data of these 8 bit patterns, a 8 bit data value shall change every [4].
[0062] Thus, formation of the digital R-Y color-difference signal D(R-Y) 2 in the A/D-conversion section 26, and when conversion to digital R-Y color-difference-signal D(R-Y)2' is performed according to the conventional technique from the digital R-Y color-difference signal D(R-Y) 2 in the number transducer 31 of bits The digital data of 8 bit patterns made into digital R-Y color-difference-signal D(R-Y) 2' obtained from the number transducer 31 of bits Formation of the digital R-Y color-difference signal [in the A/D-conversion section 26 to a 8 bit data value changing every / 4] D(R-Y) 2, and in the basis on which conversion to digital R-Y color-difference-signal D(R-Y)2' is performed according to this invention from the digital R-Y color-difference signal D(R-Y) 2 in the number transducer 31 of bits As the digital data of 8 bit patterns made into digital R-Y color-difference-signal D(R-Y) 2' obtained from the number transducer 31

of bits is shown in C of drawing 5 , a 8 bit data value shall change every [2]. Therefore, when following this invention, as compared with the case where the conventional technique is followed, it will double conversion precision.

[0063] Namely, if it is in the example shown in drawing 1 , an input analog signal shall be changed into the A/D-conversion section 26 by the digital output data of 6 bit patterns. Even if it is in the basis of the status that the digital R-Y color-difference signal D(R-Y) 2 made into the digital output data of 6 bit patterns based on the R-Y color-difference signal (R-Y) 2 is formed, substantially The digital R-Y color-difference signal D(R-Y) 2 can be treated with the precision of 7 bit patterns. For example, the deterioration of the digital R-Y color-difference signal D(R-Y) 2 compared when an input analog signal shall be changed into the A/D-conversion section 26 by the digital output data of 8 bit patterns will be suppressed effectively.

[0064] Formation of the digital B-Y color-difference signal D(B-Y) 2 which changes with the digital output data of 6 bit patterns based on the B-Y color-difference signal (B-Y) 2 in the A/D-conversion section 27, And the example of the conversion to digital B-Y color-difference-signal D(B-Y)2' which consists of the digital B-Y color-difference signal D(B-Y) 2 in the number transducer 32 of bits with the digital data of 8 bit patterns Formation of the digital R-Y color-difference signal D(R-Y) 2 which changes with the digital output data of 6 bit patterns based on the R-Y color-difference signal (R-Y) 2 in the A/D-conversion section 26 shown in drawing 5 , And it is the same as that of the conversion to digital R-Y color-difference-signal D(R-Y)2' which consists of the digital R-Y color-difference signal D(R-Y) 2 in the number transducer 31 of bits with the digital data of 8 bit patterns, and a detailed explanation is omitted.

[0065] And if it is in the example shown in drawing 1 , an input analog signal shall be changed into the A/D-conversion section 27 by the digital output data of 6 bit patterns. Even if it is in the basis of the status that the digital B-Y color-difference signal D(B-Y) 2 made into the digital output data of 6 bit patterns based on the B-Y color-difference signal (B-Y) 2 is formed, substantially The digital B-Y color-difference signal D(B-Y) 2 can be treated with the precision of 7 bit patterns. For example, the deterioration of the digital B-Y color-difference signal D(B-Y) 2 compared when an input analog signal shall be changed into the A/D-conversion section 27 by the digital output data of 8 bit patterns will be suppressed effectively.

[0066] In the example shown in drawing 1 , while the color video signal SV1 from the video-signal input terminal 11 is supplied to the synchronizing signal separation section 40, the color video signal SV2 from the video-signal input terminal 12 is supplied to the synchronizing signal separation section 41. In the synchronizing signal separation section 40, horizontal synchronizing signal (line synchronizing signal) PH1 and the vertical synchronizing signal (field synchronizing signal) PV1 which are contained in it are separated from the color video signal SV1, and they are supplied to the timing-signal formation section 42. In the synchronizing signal separation section 41, horizontal synchronizing signal PH2 and the vertical synchronizing signal PV2 which are contained in it are similarly separated from the color video signal SV2, and they are supplied to the timing-signal formation section 43.

[0067] If it is in the timing-signal formation section 42, the timing signal for writing WL to the line [synchronizing with horizontal synchronizing signal PH1 and the vertical synchronizing signal PV1 from the synchronizing signal separation section 40] memory section 22 and timing-signal RL for read-out, timing-signal RF for read-out to the frame memory section 30, and selection-control signal SS are formed. Moreover, if it is in the timing-signal formation section 43, the timing signal for writing WF to the frame memory [synchronizing with horizontal synchronizing signal PH2 and the vertical synchronizing signal PV2 from the synchronizing signal separation section 41] section 30 is formed.

[0068] The digital luminance signal DYF1 and the digital R-Y color-difference signal DRF1 which are obtained from LPF 19, 20, and 21, respectively And digital B-Y color-difference signal DBF1 The timing signal for writing WL and the timing signal for read-out RL from the timing-signal formation section 42 are supplied to the line memory section 22 supplied. And in the line memory section 22, it responds to the timing signal for writing WL. The digital luminance signal DYF1 and digital R-Y color-difference signal DRF1 And digital B-Y color-difference signal

DBF1, respectively a part (it corresponds to each line term in the color video signal SV1) for each line term -- every, while it is written in one by one The digital luminance signal DYF1 for each line term written in according to the timing signal for read-out RL, and digital R-Y color-difference signal DRF1 And digital B-Y color-difference signal DBF1, respectively With the read time equivalent to 1/2, i.e., abbreviation abbreviation the term of 1/2 line, of a line term in the color video signal SV1, time base compaction is carried out and it is read.

[0069] Each of the timing signal for writing WL from the timing-signal formation section 42 and the timing signal for read-out RL is the digital luminance signal DYF1 and the digital R-Y color-difference signal DRF1 from which the start time of the read time equivalent to abbreviation the term of 1/2 line is read in the read time. And digital B-Y color-difference signal DBF1 The status that it will be in agreement with each one line end time of the write time about a part for a term shall be set up.

[0070] The digital luminance signal DYF1 and the digital R-Y color-difference signal DRF1 And the writing about each of the digital B-Y color-difference signal DBF1 and read-out [in the line memory section 22 by that cause] As the above-mentioned drawing 9 is shown by the dashed line, they are the digital luminance signal DYF1 and the digital R-Y color-difference signal DRF1. And digital B-Y color-difference signal DBF1 While a part for each line term of each is written in one by one As drawing 9 is shown by the solid line, it carries out and is carried out to the basis of the status that a part for each written-in line term is read. Namely, the digital luminance signal DYF1 and the digital R-Y color-difference signal DRF1 And digital B-Y color-difference signal DBF1 Read-out for each line term of each is started when all for the concerned line term are written in, it is carried out with a speed the abbreviation [twice] of a write-in speed, and it is made to be ended when time to be equivalent to abbreviation the term of 1/2 line from a start time passes.

[0071] Therefore, the digital luminance signal DYF1 from the line memory section 22 and the digital R-Y color-difference signal DRF1 And digital B-Y color-difference signal DBF1 Read-out for each line term of each will set every [time to be equivalent to abbreviation the term of 1/2 line], and the spacing equivalent to abbreviation the term of 1/2 line, and will be performed intermittently. Consequently, the digital luminance signal DYF1 from the line memory section 22 and the digital R-Y color-difference signal DRF1 And digital B-Y color-difference signal DBF1 Time base compaction of the part for each line term of each is carried out to the signal within a time equivalent to abbreviation the term of 1/2 line, and it is formed. The 1/2 line term digital luminance signal DYX1, the 1/2 line term digital R-Y color-difference signal DRX1, and the 1/2 line term digital B-Y color-difference signal DBX1 are obtained intermittently one by one, respectively.

[0072] Moreover, timing-signal RF for read-out from the timing signal for writing WF and the timing-signal formation section 42 from the timing-signal formation section 43 is supplied to the frame memory section 30 to which the digital luminance signal DYF2, the digital R-Y color-difference signal DRF2, and the digital B-Y color-difference signal DBF2 which are obtained from LPF 29, 33, and 34, respectively are supplied. This sets among the frame memory section 30. According to the timing signal for writing WF, each for a part for an odd number field term and an even-number field term which forms a part for each frame term in the digital luminance signal DYF2 It is written in one by one. every [which are contained in it / two or more / for a line term / each] -- Each for a part for an odd number field term and an even-number field term which forms a part for each frame term in the digital R-Y color-difference signal DRF2 It is written in one by one. every [which are contained in it / two or more / for a line term / each] -- further every [by which each for a part for an odd number field term and an even-number field term which forms a part for each frame term in the digital B-Y color-difference signal DBF2 is contained in it / two or more / for a line term / each] -- it is written in one by one

[0073] The amount of [and / which is contained in a part for the odd number field term in the written-in digital luminance signal DYF2 in the frame memory section 30] each line term According to timing-signal RF for read-out, it is read with the read time equivalent to abbreviation the term of 1/2 line. Then, a part for each line term contained in a part for the even-

number field term in the written-in digital luminance signal DYF2 is read with the read time equivalent to abbreviation the term of 1/2 line according to timing-signal RF for read-out. That is, time-base-compaction read-out about a part for each line term contained in each for a part for an odd number field term and an even-number field term in the written-in digital luminance signal DYF2 is performed one by one.

[0074] The amount of [moreover, / which is contained in a part for the odd number field term in the digital R-Y color-difference signal DRF2 written in with it] each line term According to timing-signal RF for read-out, it is read with the read time equivalent to abbreviation the term of 1/2 line. Then, a part for each line term contained in a part for the even-number field term in the written-in digital R-Y color-difference signal DRF2 is read with the read time equivalent to abbreviation the term of 1/2 line according to timing-signal RF for read-out. That is, time-base-compaction read-out about a part for each line term contained in each for a part for an odd number field term and an even-number field term in the written-in digital R-Y color-difference signal DRF2 is performed one by one.

[0075] The amount of [furthermore, / which is contained in a part for the odd number field term in the written-in digital B-Y color-difference signal DBF2] each line term According to timing-signal RF for read-out, it is read with the read time equivalent to abbreviation the term of 1/2 line. Then, a part for each line term contained in a part for the even-number field term in the written-in digital B-Y color-difference signal DBF2 is read with the read time equivalent to abbreviation the term of 1/2 line according to timing-signal RF for read-out. That is, time-base-compaction read-out about a part for each line term contained in each for a part for an odd number field term and an even-number field term in the written-in digital B-Y color-difference signal DBF2 is performed one by one.

[0076] consequently, from the frame memory section 30, the amount of [for a part for the odd number field term which constitutes a part for each frame term in the digital luminance signal DYF2, and an even-number field term / which is alike, respectively and is contained] each line term The 1/2 line term digital luminance signal DYX2 which time base compaction will be carried out to the digital signal within a time carried out by abbreviation of 1/2 line, and will be formed it obtains intermittently one by one -- having -- moreover, digital R-Y color-difference signal DRF2 The amount of [for a part for the odd number field term which constitutes a part for each frame term which can be set, and an even-number field term / which is alike, respectively and is contained] each line term 1/2 line term digital R-Y color-difference signal DRX2 which time base compaction will be carried out to the digital signal within a time carried out by abbreviation of 1/2 line, and will be formed it obtains intermittently one by one -- having -- further -- digital B-Y color-difference signal DBF2 The amount of [for a part for the odd number field term which constitutes a part for each frame term which can be set, and an even-number field term / which is alike, respectively and is contained] each line term 1/2 line term digital B-Y color-difference signal DBX2 which time base compaction will be carried out to the digital signal within a time carried out by abbreviation of 1/2 line, and will be formed It is obtained intermittently one by one.

[0077] An example of the video-signal processing circuit concerning this invention will be formed of the fraction which contains each part and the synchronizing signal separation sections 40 and 41 from the video-signal input terminal [in drawing 1 as ** or **] 12, the reference-voltage occurrence section 18, and the Y / C separation section 23 to the frame memory section 30, and the timing-signal formation sections 42 and 43 like [above-mentioned].

[0078] And in the example shown in drawing 1 , the 1/2 line term digital luminance signal DYX1, the 1/2 line term digital R-Y color-difference signal DRX1, and the 1/2 line term digital B-Y color-difference signal DBX1 which are obtained from the line memory section 22 are supplied to selection contact 51A of the signal selection section 51, selection contact 52A of the signal selection section 52, and selection contact 53A of the signal selection section 53, respectively.

[0079] Moreover, selection contact 51B prepared between selection contact 51A and selection contact 51C in the signal selection section 51, selection contact 52B prepared between selection contact 52A and selection contact 52C in the signal selection section 52, And digital picture

image mute signal DM from the picture image mute signal occurrence section 54 is supplied to each of selection contact 53B prepared between selection contact 53A and selection contact 53C in the signal selection section 53.
[0080] Furthermore, the 1/2 line term digital luminance signal DYX2, the 1/2 line term digital R-Y color-difference signal DRX2, and the 1/2 line term digital B-Y color-difference signal DBX2 which are obtained from the frame memory section 30 are supplied to selection contact 51C of the signal selection section 51, selection contact 52C of the signal selection section 52, and selection contact 53C of the signal selection section 53, respectively.
[0081] Selection-control signal SS which synchronized with horizontal synchronizing signal PH1 and the vertical synchronizing signal PV1 which were separated from the color video signal SV1 from the timing-signal formation section 42 is supplied to each of the signal selection sections 51, 52, and 53, and each signal selection operation of the signal selection sections 51, 52, and 53 is controlled by selection-control signal SS.
[0082] If it is in the signal selection section 51, in within a time [by which traveling contact 51D is equivalent to each line term of the color video signal SV1], the status that the connection with selection contact 51A, the connection with selection contact 51B, and the connection with selection contact 51C are made one by one is repeated. It is made for the status that the status that the status that traveling contact 51D is connected to selection contact 51A, and traveling contact 51D are connected to selection contact 51C in that case is shorter than the 1/2 line term in the color video signal SV1 a little respectively and that a time continuation is carried out and traveling contact 51D is connected to selection contact 51B to be a short time and only ****** very much.
[0083] Similarly, even if it is in each of the signal selection sections 52 and 53, in within a time [by which traveling contacts 52D and 53D are equivalent to each line term of the color video signal SV1], the status that the connection with the selection contacts 52A and 53A, the connection with the selection contacts 52B and 53B, and the connection with the selection contacts 52C and 53C are made one by one is repeated. It is made for the status in that case that the status that traveling contacts 52D and 53D are connected to the selection contacts 52A and 53A and the status that traveling contacts 52D and 53D are connected to the selection contacts 52C and 53C are shorter than the 1/2 line term in the color video signal SV1 a little respectively and that a time continuation is carried out and traveling contacts 52D and 53D are connected to the selection contacts 52B and 53B to be a short time and only ******
[0084] This corresponds to each frame term in the color video signal SV1 in the signal selection section 51. The 1/2 line term digital luminance signal DYX1 supplied to selection contact 51A It is taken out from the 1/2 line term in the color video signal SV1 by traveling contact 51D with time short a little. Next, digital picture image mute signal DM supplied to selection contact 51B It is extremely taken out by traveling contact 51D with a short time, and it is followed. The 1/2 line term digital luminance signal DYX2 supplied to selection contact 51C The status that it is taken out from the 1/2 line term in the color video signal SV1 by traveling contact 51D with time short a little is taken for every time corresponding to each line term in the color video signal SV1. Therefore, the status where the 1/2 line term digital luminance signal DYX1, digital picture image mute signal DM, and the 1/2 line term digital luminance signal DYX2 form the digital luminance signal for an one line term and deliver one by one as a thing is repeated, and the digital luminance signal for an one frame term is obtained from traveling contact 51D of the signal selection section 51 by the digital luminance signal for the one line term delivered one by one.
[0085]

Since it became timeout time, translation result display processing is stopped.

* NOTICES *

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block block diagram showing an example of the picture image display concerning this invention which an example of the video-signal processing circuit concerning this invention applied and consisted of.
[Drawing 2] It is the timing diagram with which an explanation of the A/D-conversion section with which an example of the video-signal processing circuit concerning this invention is equipped of operation is presented.
[Drawing 3] It is the block connection diagram with which an explanation of the fraction containing the A/D-conversion section in an example of the video-signal processing circuit concerning this invention, the number transducer of bits, and LPF of operation is presented.
[Drawing 4] It is the block connection diagram with which an explanation of the fraction containing the A/D-conversion section in an example of the video-signal processing circuit concerning this invention, the number transducer of bits, and LPF of operation is presented.
[Drawing 5] It is the timing diagram with which an explanation of the A/D-conversion section with which an example of the video-signal processing circuit concerning this invention is equipped of operation is presented.
[Drawing 6] It is the conceptual diagram with which an explanation of the 2 screen picture image display obtained by example of the picture image display concerning this invention is presented.
[Drawing 7] It is the block block diagram showing other examples of the picture image display concerning this invention which other examples of the video-signal processing circuit concerning this invention applied and consisted of.
[Drawing 8] It is the conceptual diagram with which an explanation of the 2 screen picture image display obtained by other examples of the picture image display concerning this invention is presented.
[Drawing 9] It is the timing diagram with which an explanation of the time base compaction of the video signal using line memory is presented.
[Drawing 10] It is the block connection diagram with which the A/D-conversion section, the number transducer of bits, and the explanation of LPF of operation which were assumed to be that for which the conventional technique was used are presented.
[Drawing 11] It is the timing diagram with which an explanation of the A/D-conversion section assumed to be that for which the conventional technique was used of operation is presented.
[Description of Notations]
11, 12 Video-signal input terminal
13, 23 Y / C separation section
14, 16, 17, 24, 26, 27 A/D-conversion section
15, 25 Color difference decoder section
18, 28 Reference-voltage occurrence section
19,20,21,29,33,34,71,72,73 LPF
22 Line Memory Section
30 Frame Memory Section
31, 32 The number transducer of bits
40, 41 Synchronizing signal separation section

42, 43, 61 Timing-signal formation section
51, 52, 53, 65, 66, 67 Signal selection section
54 Picture Image Mute Signal Occurrence Section
55, 56, 57, 62, 63, 64 D/A-conversion section
58 Status-Signal Formation Section
59 2 Screen Picture Image Display

[Translation done.]

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CLAIMS

[Claim(s)]
[Claim 1] The sampling comparison with the separation section which separates and obtains a luminance signal and a chrominance signal from a color video signal, and the 1st reference voltage and the above-mentioned luminance signal which take two or more voltage values which have the 1st number of stages and are gradually different is performed. The 1st analog / digital conversion means which obtains the luminance signal digitized based on the result of this sampling comparison, While two or more voltage values which have the ****** 2nd number of stages, and are gradually different from the 1st above-mentioned number of stages are taken The sampling comparison with the 2nd reference voltage and the above-mentioned chrominance signal with the difference of the maximum voltage value and the minimum voltage value equivalent to 1/k of the difference of the maximum voltage value of the 1st above-mentioned reference voltage and the minimum voltage value (number with which k consists of 1 size) is performed. The 2nd analog / digital conversion means which obtains the chrominance signal digitized based on the result of this sampling comparison, this -- with a number conversion means of bits to perform processing to which the number of bits of the digitized chrominance signal which is obtained from the 2nd analog / digital conversion means is made to increase While each of the digitized chrominance signal which is obtained from the luminance signal and the above-mentioned number conversion means of bits which are acquired from the analog / digital conversion means of the above 1st, and which were digitized is written in serially The video-signal processing circuit constituted by providing the memory section from which each of the digitized luminance signal by which writing was made, and the digitized chrominance signal is read with predetermined timing.
[Claim 2] The chrominance signal obtained from the separation section shall consist of the 1st and 2nd color-difference signals. The 2nd analog / digital conversion means While two or more voltage values which have the ****** 2nd number of stages, and are gradually different from the 1st number of stages are taken The sampling comparison with the 2nd reference voltage and the 1st above-mentioned color-difference signal with the difference of the maximum voltage value and the minimum voltage value equivalent to 1/k of the difference of the maximum voltage value of the 1st reference voltage and the minimum voltage value (number with which k consists of 1 size) is performed. The 1st analog / digital transducer for color-difference signals which obtains the 1st color-difference signal digitized based on the result of this sampling comparison, The sampling comparison with the 2nd above-mentioned reference voltage and the 2nd above-mentioned color-difference signal is performed. It is constituted including the 2nd analog / digital transducer for color-difference signals which obtains the 2nd color-difference signal digitized based on the result of this sampling comparison. Furthermore, the 1st number transducer of bits which performs processing to which the number conversion means of bits makes the number of bits of the 1st digitized color-difference signal which is obtained from the analog / digital transducer for color-difference signals of the above 1st increase, The video-signal processing circuit according to claim 1 characterized by being constituted including the 2nd number transducer of bits which performs processing to which the number of bits of the 2nd digitized color-difference signal which is obtained from the analog / digital transducer for color-difference

signals of the above 2nd is made to increase.
[Claim 3] In the 2nd analog / digital conversion means, the middle voltage value of the maximum voltage value of the 2nd reference voltage and the minimum voltage value is made in agreement by the middle voltage value of the maximum voltage value of the 1st reference voltage, and the minimum voltage value. When setting the maximum voltage value and the minimum voltage value of the 1st above-mentioned reference voltage to VT and VB, respectively, while the maximum voltage value of the 2nd above-mentioned reference voltage is selected by [(VT+VB) /2]+ [(VT-VB)/2k] The video-signal processing circuit according to claim 1 or 2 characterized by the minimum voltage value of the 2nd above-mentioned reference voltage being selected by [(VT+VB)/2]-[(VT-VB) / 2k].
[Claim 4] The digitized luminance signal which is obtained from the 1st analog / digital conversion means forms the data of 8 bit patterns. Moreover, the digitized chrominance signal which is obtained from the 2nd analog / digital conversion means forms the data of 6 bit patterns. The video-signal processing circuit according to claim 1, 2, or 3 where the number conversion means of bits is characterized by changing the digitized chrominance signal which is obtained from the analog / digital conversion means of the above 2nd into what forms the data of 8 bit patterns.
[Claim 5] The 1st separation section which separates the 1st luminance signal and 1st chrominance signal from the 1st color video signal, and is obtained, The sampling comparison with the 1st reference voltage and the 1st above-mentioned luminance signal which take two or more voltage values which have the 1st number of stages and are gradually different is performed. The 1st analog / digital conversion means which obtains the luminance signal by which the 1st was digitized based on the result of this sampling comparison, The 2nd analog / digital conversion means which obtains the chrominance signal which performs the sampling comparison with the 1st above-mentioned reference voltage and the 1st above-mentioned chrominance signal, and by which the 1st was digitized based on the result of this sampling comparison, While each of the chrominance signal by which the above 1st obtained from the luminance signal by which the above 1st obtained from the analog / digital conversion means of the above 1st was digitized, and the analog / digital conversion means of the above 2nd was digitized is written in serially The 1st memory section from which each of the chrominance signal by which the luminance signal by which the 1st by which writing was made was digitized, and the 1st were digitized is read with predetermined timing, The 2nd separation section which separates the 2nd luminance signal and 2nd chrominance signal from the 2nd color video signal, and is obtained, The 3rd analog / digital conversion means which obtains the luminance signal which performs the sampling comparison with the 1st above-mentioned reference voltage and the 2nd above-mentioned luminance signal, and by which the 2nd was digitized based on the result of this sampling comparison, While two or more voltage values which have the ****** 2nd number of stages, and are gradually different from the 1st above-mentioned number of stages are taken The sampling comparison with the 2nd reference voltage and the 2nd above-mentioned chrominance signal with the difference of the maximum voltage value and the minimum voltage value equivalent to 1/k of the difference of the maximum voltage value of the 1st above-mentioned reference voltage and the minimum voltage value (number with which k consists of 1 size) is performed. The 4th analog / digital conversion means which obtains the chrominance signal by which the 2nd was digitized based on the result of this sampling comparison, this -- with a number conversion means of bits to perform processing to which the number of bits of the chrominance signal by which the 2nd obtained from the 4th analog / digital conversion means was digitized is made to increase While each of the chrominance signal by which the 2nd obtained from the luminance signal and the above-mentioned number conversion means of bits by which the 2nd obtained from the analog / digital conversion means of the above 3rd was digitized was digitized is written in serially The 2nd memory section from which each of the chrominance signal by which the luminance signal by which the 2nd by which writing was made was digitized, and the 2nd were digitized is read with predetermined timing, While the synthetic luminance signal digitized by compounding the luminance signal by which the 2nd read from the luminance signal and the memory section of the

above 2nd by which the 1st read from the memory section of the above 1st was digitized was digitized is obtained The signal synthesis section which obtains the synthetic chrominance signal digitized by compounding the chrominance signal by which the 2nd read from the chrominance signal and the memory section of the above 2nd by which the 1st read from the memory section of the above 1st was digitized was digitized, Digital-to-analog conversion is given to each of the digitized synthetic luminance signal which is obtained from this signal synthesis section, and the digitized synthetic chrominance signal. A digital-to-analog conversion means to obtain the luminance signal for a picture image display, and the chrominance signal for a picture image display, It is based on the luminance signal for a picture image display and the chrominance signal for a picture image display which are obtained from this digital-to-analog conversion means. Picture image display constituted by providing the 2 screen picture image display which performs the 2 screen picture image display which displays the picture image which the color video signal of the above 1st expresses, and the picture image which the color video signal of the above 2nd expresses, respectively.

[Claim 6] The 1st chrominance signal obtained from the 1st separation section shall consist of the 1st and 2nd color-difference signals. The 2nd analog / digital conversion means perform the sampling comparison with the 1st reference voltage and the 1st above-mentioned color-difference signal. The 1st analog / digital transducer for color-difference signals which obtains the 1st color-difference signal digitized based on the result of this sampling comparison, The sampling comparison with the 1st above-mentioned reference voltage and the 2nd above-mentioned color-difference signal is performed. It is constituted including the 2nd analog / digital transducer for color-difference signals which obtains the 2nd color-difference signal digitized based on the result of this sampling comparison. Moreover, the 2nd chrominance signal obtained from the 2nd separation section shall consist of the 3rd and 4th color-difference signals. The 4th analog / digital conversion means perform the sampling comparison with the 2nd reference voltage and the 3rd above-mentioned color-difference signal. The 3rd analog / digital transducer for color-difference signals which obtains the 3rd color-difference signal digitized based on the result of this sampling comparison, The sampling comparison with the 2nd above-mentioned reference voltage and the 4th above-mentioned color-difference signal is performed. It is constituted including the 4th analog / digital transducer for color-difference signals which obtains the 4th color-difference signal digitized based on the result of this sampling comparison. Furthermore, the 1st number transducer of bits which performs processing to which the number conversion means of bits makes the number of bits of the 3rd digitized color-difference signal which is obtained from the analog / digital transducer for color-difference signals of the above 3rd increase, Picture image display according to claim 5 characterized by being constituted including the 2nd number transducer of bits which performs processing to which the number of bits of the 4th digitized color-difference signal which is obtained from the analog / digital transducer for color-difference signals of the above 4th is made to increase.

[Claim 7] In the 4th analog / digital conversion means, the middle voltage value of the maximum voltage value of the 2nd reference voltage and the minimum voltage value is made in agreement by the middle voltage value of the maximum voltage value of the 1st reference voltage, and the minimum voltage value. When setting the maximum voltage value and the minimum voltage value of the 1st above-mentioned reference voltage to VT and VB, respectively, while the maximum voltage value of the 2nd above-mentioned reference voltage is selected by [(VT+VB) /2]+ [(VT-VB)/2k] Picture image display according to claim 5 or 6 characterized by the minimum voltage value of the 2nd above-mentioned reference voltage being selected by [(VT+VB)/2]-[(VT-VB) / 2k].

[Claim 8] The 1st separation section which separates the 1st luminance signal and 1st chrominance signal from the 1st color video signal, and is obtained, The 2nd separation section which separates the 2nd luminance signal and 2nd chrominance signal from the 2nd color video signal, and is obtained, The sampling comparison with the 1st reference voltage and the 2nd above-mentioned luminance signal which take two or more voltage values which have the 1st number of stages and are gradually different is performed. The 1st analog / digital conversion

means which obtains the luminance signal digitized based on the result of this sampling comparison, While two or more voltage values which have the ****** 2nd number of stages, and are gradually different from the 1st above-mentioned number of stages are taken The sampling comparison with the 2nd reference voltage and the 2nd above-mentioned chrominance signal with the difference of the maximum voltage value and the minimum voltage value equivalent to 1/k of the difference of the maximum voltage value of the 1st above-mentioned reference voltage and the minimum voltage value (number with which k consists of 1 size) is performed. The 2nd analog / digital conversion means which obtains the chrominance signal digitized based on the result of this sampling comparison, this -- with a number conversion means of bits to perform processing to which the number of bits of the digitized chrominance signal which is obtained from the 2nd analog / digital conversion means is made to increase While each of the digitized chrominance signal which is obtained from the luminance signal and the above-mentioned number conversion means of bits which are acquired from the analog / digital conversion means of the above 1st, and which were digitized is written in serially The memory section from which each of the digitized luminance signal by which writing was made, and the digitized chrominance signal is read with predetermined timing, Digital-to-analog conversion is given to each of the digitized chrominance signal which was read from the luminance signal and the above-mentioned memory section which were read from this memory section, and which were digitized. A digital-to-analog conversion means to obtain a read-out luminance signal and a read-out chrominance signal,

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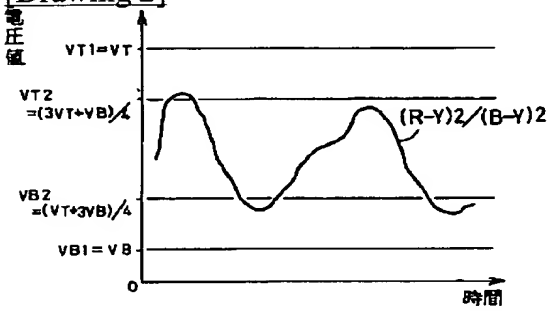
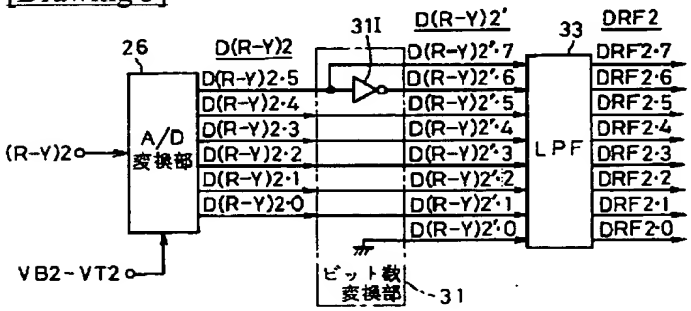
DRAWINGS

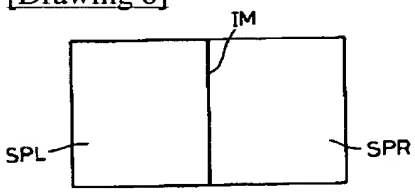
[Drawing 2]



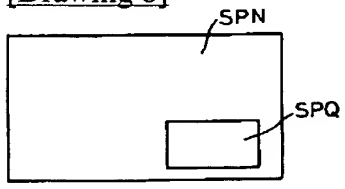
[Drawing 3]



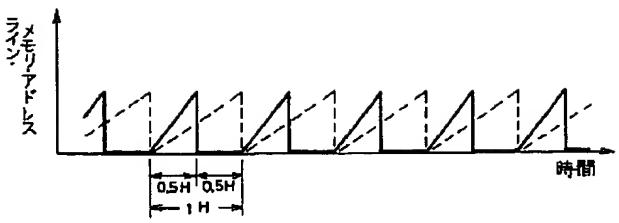
[Drawing 6]



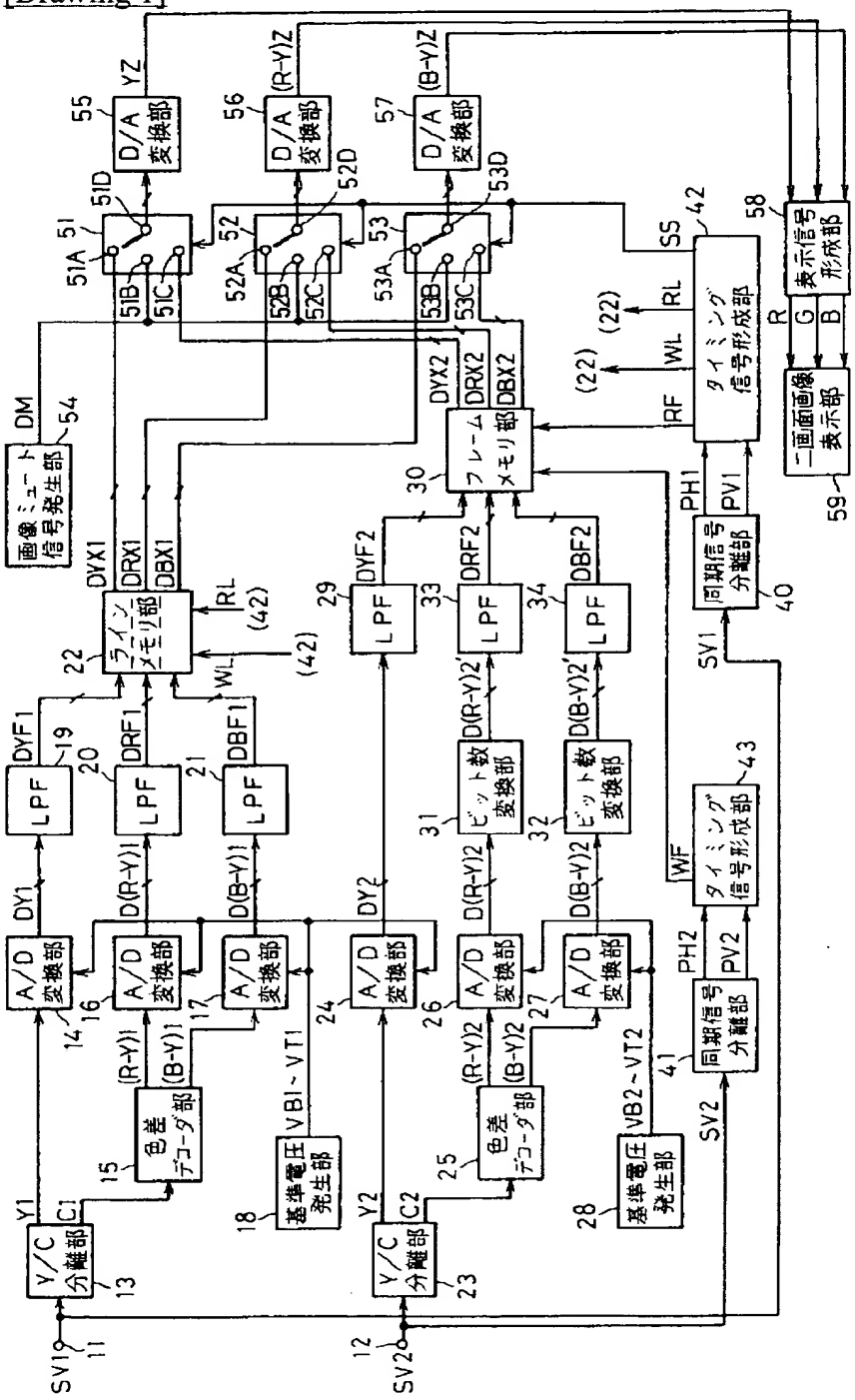
[Drawing 8]



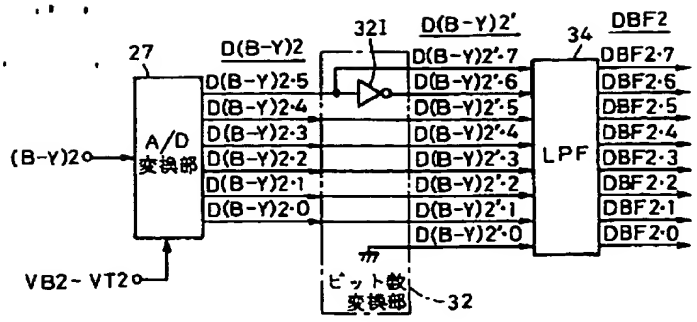
[Drawing 9]



[Drawing 1]



[Drawing 4]



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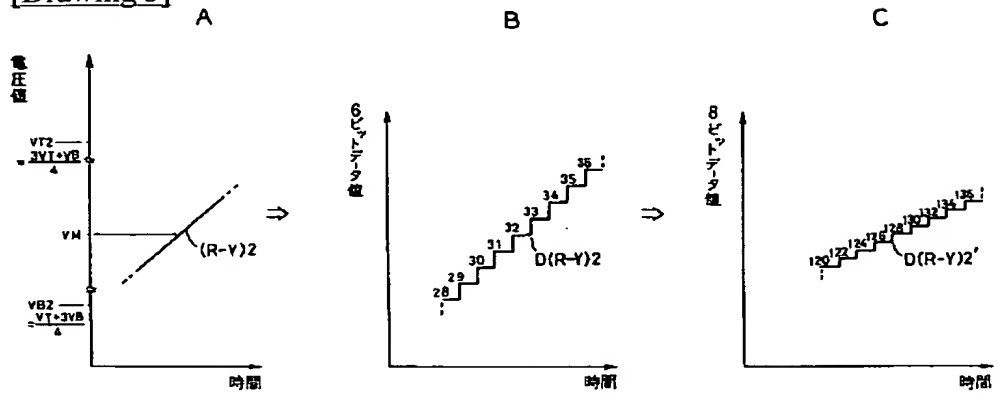

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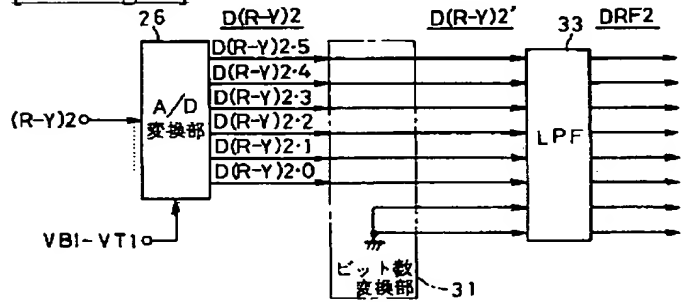
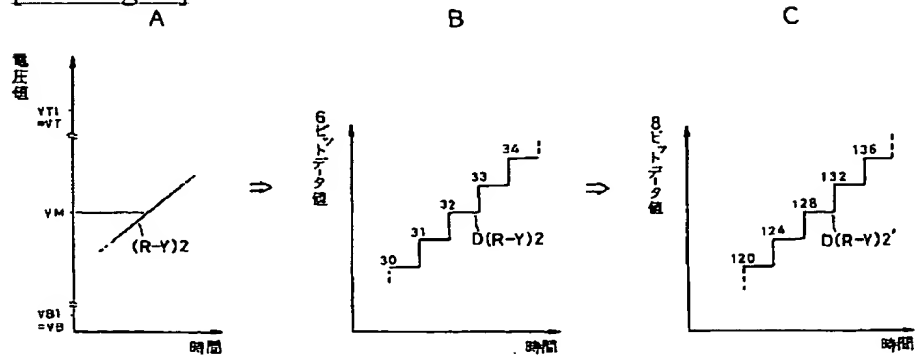


[Drawing 11]



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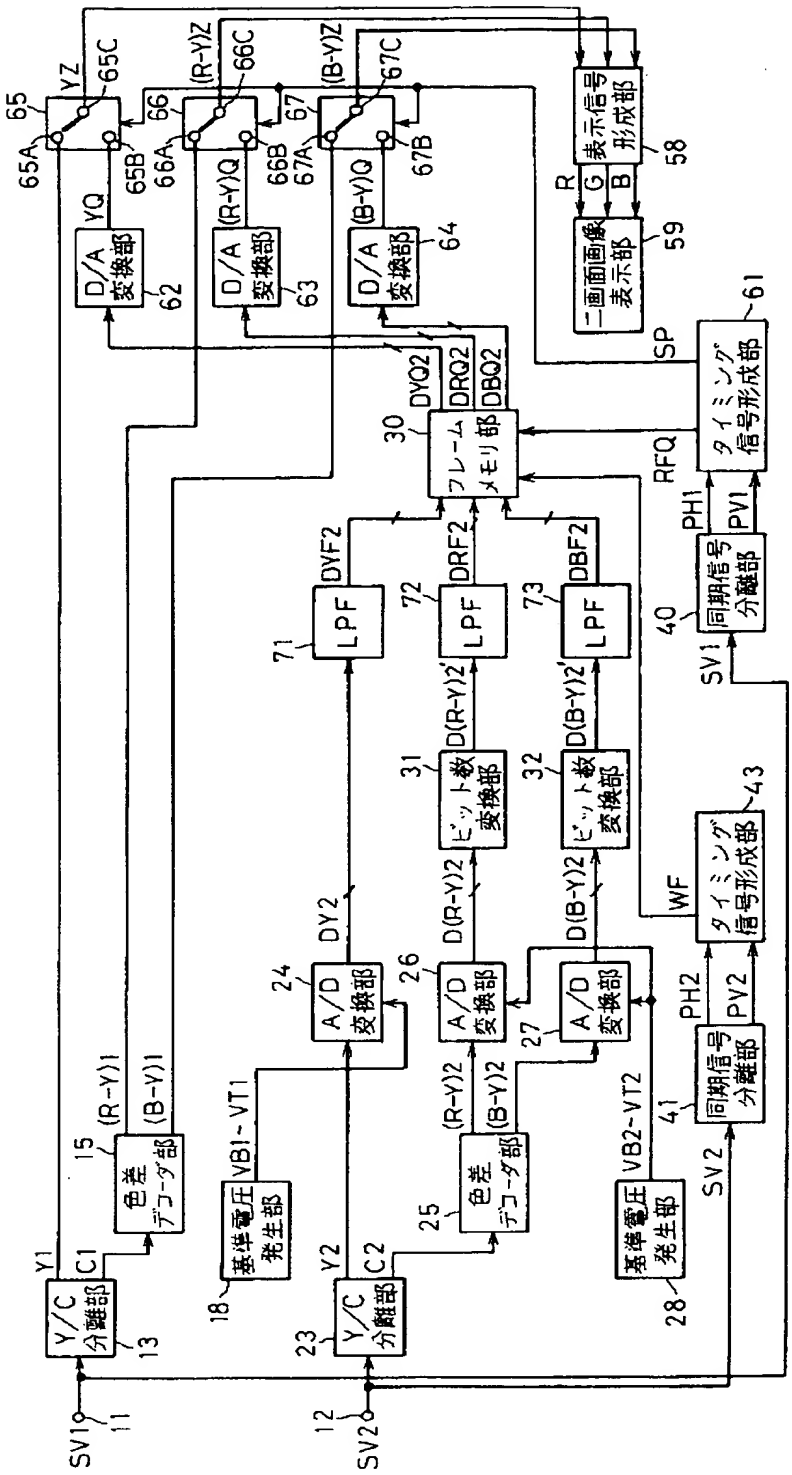

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